

sulcata Krauss. As Simpson believes also to be typical his specimen with purplish nacre, further investigations will be necessary, however, as it is probable that the species shows some variability, and that *Tetraplodon schombergianus* is a synonym.

Conformable with the conceptions here exposed, we may consider the super-family of Naiades as composed of two families: *Unionidæ* and *Diplodontidæ*. The former, the only one occurring in North America, may be divided into the following three sub-families:

UNIONIDÆ with the genera: *Anodonta*, *Lastena*, *Gonidea*, *Anodontoides*, *Pegias*, *Arcidens*, *Sympynota*, *Alasmidonta*, *Hemilastena*, *Margaritana*, *Unio*.

QUADRULINÆ with the genera: *Quadrula*, *Pleurobema*, *Obovaria*, *Cyprogenia*, *Obliquaria*, *Dromus*.

LAMPSILINÆ with the genera: *Lampsilis*, *Truncilla*, *Micromya*, *Medionidus*, *Nephronaias*, *Glebula*, *Plagiola*.

As shown by the arguments given, the opinions of Mr. Simpson, in many essential points, are in accordance with those of the writer, and I thought it useful to publish such of my ideas as do not accord with Mr. Simpson's, in order to submit them to examination in the discussion which a book of such great importance will naturally provoke.

S. Paulo (Brazil) 10 May, 1901.

AN ABNORMAL CHITON.

In September of last year Mr. Hemphill sent me a photograph of an abnormal specimen of the common Californian species *Ischnochiton (Maugerella) conspicuus* Cpr., the divergence from the ordinary form consisting in its having *only six valves*. The length of the specimen (photo) is about 70 and the breadth 38 millimeters. There is no indication of pathologic deformity; the proportionate size of the valves compared with the size of the shell as a whole, exhibits no eccentricity. Cooke, in the Mollusca volume of the Cambridge Natural History Series, remarks that "seven-valved monstrosities very rarely occur." Sykes has recently reported and figured a three-valved individual. In the hundreds of Chitons of various species that I have collected on the West Coast I have never detected an example with less than the usual number, though it is possible in handling a large number, especially of the smaller forms, to

overlook an individual varying in the above respect. It will be well for collectors to keep their eyes open for such abnormal individuals; it may be found that they occur oftener than is supposed.

R. E. C. STEARNS.

Los Angeles, May 2, 1901.

THE AMERICAN PHYSÆ.

BY O. A. CRANDALL, SEDALIA, MO.

Physa gyrina var. *albofilata* Ancey. This variety is confined to southwest Missouri and northwestern Arkansas, extending into the Indian Territory and Kansas. It is distinguished by its lighter color, fine lines of growth, rarely showing cross striae, generally malleated on some part of the surface, and large white varicose bands. It is generally found with five whorls.

Forms: *Physa hawni* Lea, *P. cylindrica* Newcomb, *Physa smithsoniana* Lea.

P. gyrina is the most widely distributed of all the American species. It extends over all the territory between the Alleghanies and Rocky Mountains, and from the Arctic region south into Alabama and Texas. I have examples from near Philadelphia, Pa., and from Routt county, Colorado, but I do not consider them permanent inhabitants of those localities. It is possible that they may yet be found to extend as far west as the Sierra Nevada Mountains, but I have been unable to obtain any evidence that they now inhabit the Great Basin. I account for their being found outside of the limits here given by the ova being carried on the feet of migratory birds, by means of which isolated colonies are planted, which survive for a time, but finally become absorbed by the more numerous inhabitants and disappear. They may be called sporadic colonies. This also in part accounts for the hybridization that has produced so many forms that have been described as new species, only to vanish in a season.

Physa elliptica Lea.

Includes the sub-species *Physa elliptica troostiana* Lea, *Physa elliptica minor* n. v.

There probably is not a more distinct species in the genus than this, yet Binney and Haldeman place it in the synonymy of *P. gyrina* Say. Tryon recognized it as a species, gave it a very large